

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions of claims in the application:

Listing of Claims:

1. (Currently amended) A computer-implemented method for generating an execution order for a function block diagram having a plurality of function blocks, the function blocks each have one or more inputs, the method comprising:

associating an input of a first function block and a second function block;

determining input data availability for the inputs of the plurality of function blocks by determining that data is available for the input of the first function block upon detecting that an execution order number has been assigned to the second function block;

automatically assigning ~~an~~ respective execution order numbers to the plurality of function blocks in the function block diagram ~~at least one of the plurality of function blocks~~ based in part upon a determination of whether an input data source is derived from a controlled process and whether the input data source is part of a feedback loop;

determining presence of ~~whether an unspecified unnecessary~~ feedback loop ~~exists~~ in the function block diagram; and

reporting an error to a user based at least in part upon determining that ~~[[if]] an unspecified unnecessary~~ feedback loop exists in the function block diagram.

2. (Previously presented) The method of claim 1, determining input data availability for the inputs of the plurality of function blocks comprises:

determining that a feedback loop exists in the function block diagram; and

assuming data availability for function blocks in the feedback loop.

3. (Currently amended) The method of claim 2, determining that the feedback loop exists in the function block diagram comprises determining whether a ~~localized~~ feedback wire is associated with a function block input in the feedback loop, and wherein assuming data availability for function blocks in the feedback loop comprises assuming data availability for the function block input associated with the ~~localized~~ feedback wire.
4. (Canceled)
5. (Currently amended) The method of claim 1, determining whether an ~~unspecified unnecessary~~ feedback loop exists comprises determining that an unspecified feedback loop exists [[if]] upon detecting that no ~~localized~~ feedback wire exists in the feedback loop.
6. (Currently amended) The method of claim 5, determining input data availability comprises determining whether an extra ~~localized~~ feedback wire exists in the function block diagram, and generating an error if an extra ~~localized~~ feedback wire exists in the function block diagram.
7. (Cancelled)
8. (Cancelled)
9. (Previously presented) The method of claim 1, determining input data availability for the inputs of the plurality of function blocks comprises assuming data availability for a first input of a first function block if the first input is associated with an input reference.
10. (Previously presented) The method of claim 9, generating an execution order for the function block diagram comprises assigning an execution number to each of the plurality of function blocks in the function block diagram.

11. (Previously presented) The method of claim 10, the function block diagram comprises an association between the first input of the first function block and a second function block, and wherein determining data availability for the plurality of function blocks comprises determining that data is available for the first input of the first function block if an execution order number has been assigned to the second function block.
12. (Previously presented) The method of claim 10, assigning an execution number to each of the plurality of function blocks comprises assigning a next available execution order number to the first function block if data is available for all inputs of the first function block.
13. (Currently amended) In a controller configuration system, a computer-implemented method for generating a control routine from a function block diagram having a plurality of function blocks, the function blocks each have one or more inputs, the method comprising:
- determining input data availability for the inputs of the plurality of function blocks by assuming data availability for a first input of a first function block based in part upon determining that the first input is associated with an input reference;
 - automatically assigning [[an]] next available execution order numbers to respective function blocks in the function block diagram based at least in part upon determining whether data is available for inputs of the first function block; ~~at least one of the plurality of function blocks based in part upon a determination of whether an input data source is part of a feedback loop;~~
 - determining that an ~~unspecified unnecessary~~ feedback loop exists in the function block diagram [[if]] upon detecting absence of a no-localized feedback wire exists in the feedback loop;
 - reporting an error to a user [[if]] upon determining that an unspecified unnecessary feedback loop exists in the function block diagram; and
 - generating a control routine from the function block diagram according to the execution order.

14. (Previously presented) The method of claim 13, determining input data availability for the inputs of the plurality of function blocks comprises:

determining that a feedback loop exists in the function block diagram; and
assuming data availability for function blocks in the feedback loop.

15. (Currently amended) The method of claim 14, determining that the feedback loop exists in the function block diagram comprises determining whether a ~~localized~~ feedback wire is associated with a function block input in the feedback loop, and wherein assuming data availability for function blocks in the feedback loop comprises assuming data availability for the function block input associated with the ~~localized~~ feedback wire.

16. (Cancelled)

17. (Cancelled)

18. (Currently amended) The method of claim 13, determining input data availability comprises determining whether an extra ~~localized~~ feedback wire exists in the function block diagram, and generating an error if an extra ~~localized~~ feedback wire exists in the function block diagram.

19. (Previously Presented) The method of claim 13, further comprising assigning an execution number to each of the plurality of function blocks in the function block diagram.

20. (Previously presented) The method of claim 19, the function block diagram comprises an association between an input of a first function block and a second function block, and wherein determining data availability for the plurality of function blocks comprises determining that data is available for the input of the first function block if an execution order number has been assigned to the second function block.

21. (Cancelled)

22. (Cancelled)

23. (Currently amended) The method of claim [[22]] 13, the function block diagram comprises an association between the first input of the first function block and a second function block, and wherein determining data availability for the plurality of function blocks comprises determining that data is available for the first input of the first function block if an execution order number has been assigned to the second function block.

24. (Cancelled)

25. (Currently amended) A computer-implemented controller configuration system for generating a control routine from a function block diagram having a plurality of function blocks, the function blocks each have one or more inputs, the system comprising:

an execution order generator component that determines input data availability for the inputs of the plurality of function blocks based at least in part upon detection of an extra feedback wire in the function block diagram, and assigns [[an]] next available execution order numbers to the function blocks in the function block diagram, the execution order generator component assigns an execution order number to at least a first function block based at least in part upon determining whether data is available for inputs of the at least first function block, ~~at least one of the plurality of function blocks based in part upon a determination of whether an input data source is derived from a controlled process and whether the input data source is part of a feedback loop, the input data availability is determined based at least in part on whether an extra localized feedback wire exists in the function block diagram~~, the execution order generator component further reports an error to a user *via* a display based at least in part upon detection of [[if]] an extra localized feedback wire exists in the function block diagram; and

a compiler component that generates a control routine from the function block diagram according to the execution order.

26. (Currently amended) A computer-implemented execution order generator for generating an execution order for a function block diagram having a plurality of function blocks, the function blocks each have one or more inputs, the execution order generator comprising:

means for determining input data availability of at least a first function block upon assigning an execution order number to a second function block; for the inputs of the plurality of function blocks;

means for automatically assigning an execution order number to each of ~~[[the]]~~ a plurality of function blocks based at least in part upon whether the input data source is part of a feedback loop;

means for determining whether an ~~unspecified unnecessary~~ feedback loop exists in the function block diagram; and

means for reporting an error to a user ~~[[if]]~~ upon determining that an unspecified unnecessary feedback loop exists in the function block diagram.